AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A particle manipulation unit, comprising:

a substrate;

a channel formed on said substrate, comprising a first channel and a second channel branched out from said first channel, capable of manipulating direction of flow of particles flowing in a liquid in said channel; and

a permeation limiting zone limiting permeation of at least a part of said particles, disposed in said first channel in the vicinity of a branching point where one or more second channels are branched out from said first channel,

wherein said permeation limiting zone has a plurality of obstacles arranged to be spaced from each other, the obstacles being selected from the group consisting of cylinders, pseudo-cylinders, cones, circular cones, elliptical cones, prisms, triangular prisms and quadrangular prisms,

a gap between adjacent obstacles is set to a size allowing a part of said particles to permeate therethrough, and said obstacles are arranged so that a direction of force causing flow of said particles lies non-normal ~~to, or~~ to and non-parallel

with a direction of arrangement of said obstacles at the front-most plane on the branching point side of said permeation limiting zone.

2.-4. (canceled)

5. (previously presented) The particle manipulation unit according to Claim 1, wherein said plurality of obstacles are configured so as to control direction of flow of said particles, and so as to guide at least a part of said particles to either of said first channel and said second channel, depending on the arrangement thereof.

6. (previously presented) The particle manipulation unit according to Claim 1, wherein said obstacles are periodically arranged in a two-dimensional manner.

7. (currently amended) A particle manipulation unit, comprising:

a substrate;

a channel formed on said substrate, comprising a main channel, and one or more side channels branched out from said main channel towards the downstream side of said main channel, capable of manipulating direction of flow of particles flowing in a liquid in said channel;

a flow control portion disposed on the upstream side of a branching point where one or more side channels are branched out from said main channel,

said flow control portion controlling direction of flow of said particles, and guiding at least a part of said particles to either of said main channel and said side channel,

wherein said flow control portion has a plurality of obstacles periodically arranged, said plurality of obstacles being configured so as to control direction of flow of said particles, and so as to guide at least a part of said particles to either of said main channel and said side channels, depending on the arrangement thereof,

the obstacles are selected from the group consisting of cylinders, pseudo-cylinders, cones, circular cones, elliptical cones, prisms, triangular prisms and quadrangular prisms, and

the obstacles are arranged so that a direction of force causing flow of said particles lies non-normal to and non-parallel with a direction of arrangement of said obstacles at a front-most plane on a branching point side of a permeation limiting zone.

8.-9. (canceled)

10. (previously presented) The particle manipulation unit according to Claim 7, wherein a gap between the adjacent

obstacles of said flow control portion in the direction of formation of said main channel differs from that in the direction of formation of said side channel.

11. (previously presented) A particle manipulation unit, comprising:

a substrate; and

a channel formed on said substrate, capable of manipulating state of flow of particles flowing in said channel, said channel having a flow control portion which comprises trenches formed on the wall surface of said channel, guiding at least a part of said particles to a predetermined direction,

wherein said trench structures have a long axis and a short axis oriented neither in parallel nor in normal to a force causing the flow of particles.

12. (previously presented) The particle manipulation unit according to Claim 11, having the flow control portion which comprises trenches periodically formed on the wall surface of said channel.

13. (original) The particle manipulation unit according to Claim 12, wherein said flow control portion comprises a plurality of periodic patterns which differ in geometry of opening of said trenches or pitch of said trench.

14. (original) The particle manipulation unit according to Claim 13, wherein said plurality of periodic patterns are formed with mirror symmetry in said flow control portion.

15. (currently amended) A particle manipulation unit comprising a substrate, and a channel formed on said substrate, capable of manipulating direction of flow of particles flowing in said channel,

said channel having, provided thereto, a permeation limiting zone limiting permeation therethrough of at least a part of said particles,

said permeation limiting zone having a width of entrance narrower than the width of said permeation limiting zone,

having a first drive means providing said particle flowing in said permeation limiting zone with a migration speed in one direction, and a second drive means providing a migration speed in other direction different from said one direction, and

said permeation limiting zone being provided with a plurality of obstacles arranged as being spaced from each other,

wherein the obstacles are selected from the group consisting of cylinders, pseudo-cylinders, cones, circular cones, elliptical cones, prisms, triangular prisms and quadrangular prisms, and

the obstacles are arranged so that a direction of force causing flow of said particles lies non-normal to and non-parallel with a direction of arrangement of said obstacles at a front-most plane on a branching point side of the permeation limiting zone.

16. (previously presented) The particle manipulation unit according to claim 1, wherein said particles contain any one of polymer resin, metal, semiconductor and biological molecules.

17. (previously presented) The particle manipulation unit according to claim 1, having a function of separating said particles depending on their sizes.

18. (previously presented) The particle manipulation unit according to claim 1, having a function of introducing a suspension, having said particles suspended therein, into said channel and diluting said suspension.

19. (previously presented) The particle manipulation unit according to claim 1, having a function of introducing a suspension, having said particles suspended therein, into said channel and desalting said suspension.

20. (previously presented) A chip having the particle manipulation unit described in claim 1.

21. (original) A detection device comprising said chip described in Claim 20 and a detection unit for said particles.

22. (original) The detection device according to Claim 21, wherein said detection unit for said particles is configured by a mass spectroscope.

23. (previously presented) A method of separating proteins comprising two or more process steps respectively using separation means differing from each other,

having, as one of said process steps separating proteins, a process step separating proteins using the chip according to claim 20 having at least a function of continuously separating proteins.

24. (original) A method of separating proteins comprising two or more process steps respectively using separation means differing from each other,

having, as one of said process steps separating proteins, a process step roughly separating proteins using a chip described in Claim 20.

25. (previously presented) A method of detecting proteins in which proteins are separated by the method of separating proteins described in Claim 23, the separated proteins are decomposed by protease treatment, and the decomposed products are identified using a mass spectroscope.

26. (original) A method of capturing proteins in which proteins are separated using the chip described in Claim 20, and a target protein is captured from a suspension of a plurality of proteins, making use of affinity.

27. (original) A method of detecting proteins in which the target protein is captured by the method of capturing proteins described in Claim 26, the surface of the chip is washed, and the captured protein is identified using a mass spectroscope.

28. (previously presented) The particle manipulation unit according to Claim 1, wherein said particles satisfying an angle between 0° and 90° to the obstacles never clog gaps in the obstacles.

29. (previously presented) The particle manipulation unit according to Claim 7, wherein said particles satisfying an

angle between 0° and 90° to the obstacles never clog gaps in the obstacles.

30. (previously presented) The particle manipulation unit according to Claim 15, wherein said particles satisfying an angle between 0° and 90° to the obstacles never clog gaps in the obstacles.